

# **Homework #1 – Molecular Biology & Biotechnology of Sex 1**

Biomedical Sciences 136 – Biology of Human Sexuality – Fall 2009

NAME: \_\_\_\_\_

SCORE: \_\_\_\_\_

**This assignment is worth 25 points toward the final course grade.**

**Using your textbook or a reliable Internet reference, answer the following questions. You may wish to review several websites or sources to verify your answers.**

## ***Submission Directions***

You may print out this assignment and type and print out the answers on another sheet(s) of paper or you may copy and paste the questions into an MS Word document (or other word processing software), type out your answers between the questions and submit them in printed form.

1. What is an endonuclease enzyme (what do they do)? Why are they useful to molecular biology and biotechnology?
2. Can DNA from another animal be inserted into a human cell and still function to code for a protein in the human cell? Is it possible to insert a human gene into a plant and have that plant produce a human protein? Briefly describe how this might be done.
3. What is a stem cell? Why might stem cells be useful to medical and infertility researchers.
4. What is cloning? Define the term clone.
5. What is reproductive cloning versus therapeutic cloning?
6. What is nuclear transfer or transplantation?
7. Briefly describe how Dolly the sheep was “cloned”. Where and when was she cloned. Why is the cloning of Dolly different from the previous cloning attempts using frogs and other amphibians? What is the name of the technique used to remove the nucleus from one cell and insert it into an egg cell?
8. Based on data from the Human Genome Project, what is the estimated number of different genes found in a human cell?
9. Using *In Vitro* Fertilization (IVF), briefly describe one technique that would allow parents to increase the chance (“choose”) that they would have a child of one particular sex (either male or female). Diagram or describe the basic steps involved in this process of sex selection.